

Appl. No. : 09/300,798
Filed : April 27, 1999

Applicant respectfully requests reconsideration of amended claims 1, 3, 7 and 10 upon which claims 2, 4-6, and 8-9 are respectively depended.

Frederick discloses an audio stream from a first source that is mixed with a second audio stream from another source to form a combined stream. Larouche discloses a single audio stream from a source where different portions of the stream are patched together to form a new stream.

Claim 1, upon which Claim 2 is dependent, has been amended to recite “cross-fading pairs of samples, each pair substantially corresponding to a playback time, one sample of each pair being selected from one of said [first] plurality of samples, the other sample of each pair being selected from a portion of said second [samples] audio data, said portion of said second audio data being selected corresponding to said overlapping portion of said common audio signal sampled at said second sampling rate.”

Claim 3, upon which Claims 4-6 are dependent, has been amended to recite “receiving in said receive buffer second audio data representing a time period t_2 of said original audio signal and sampled at a second target sampling rate different from said first target sampling rate, said second audio data from said second [audio] stream, said time period t_1 and t_2 overlapping by [in] a time period t_3 in said original audio signal [time period t_1].”

Claim 7, upon which Claims 8-9 are dependent, has been amended to recite “a cross-fader operative [responsive to a cross-fade signal] to cross-fade first resampled digital samples from said first [audio] stream with resampled digital samples from said second [audio] stream, said first resampled digital samples corresponding to an overlap [overlapping] in time of said original audio signal [with said first digital samples].”

Neither of the references discloses cross-fading samples at a location in the sample that correspond to an overlapped portion of the original or common audio signal. By cross fading the portion of the sample that correspond to an overlapping or overlapped portion of an original audio signal, multiple signals (audio or otherwise) that are generated from the same original audio signal at different compression or sampling rates can be combined for seamless playback.

Applicant respectfully submits that Claims 1-10 are now in condition for allowance. Applicant respectfully requests the Examiner to withdraw the rejection of Claims 1-10 under 35 U.S.C. § 103, and to pass these claims to issuance.

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Applicant has added Claims 11-16 and respectfully requests consideration of those claims. Applicant respectfully submits that Claims 11-16 are in condition for allowance and respectfully requests that the Examiner pass these claims to issuance.

As the claims are believed to be in condition for allowance, that action is respectfully requested.

Should there be any remaining impediments, questions or issues, the Examiner is invited to contact the undersigned attorney of record at (949) 721-2994 (direct dial) or at the general office telephone number listed below.

Respectfully submitted,

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Dated: February 14, 2002

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Version with Markings to Show Modifications
Under 37 C.F.R. § 1.121(a)(2)(ii)

The changes made to the claim in the current amendment are shown below. Insertions appear as underlined text, for example, insertions, while deletions appear as **bold strikethrough text surrounded by brackets, for example, [deletions]**.

1. (As Amended Herein) A method for cross-fading a first and second stream [audio streams] that respectively comprises first and second audio data corresponding to a common audio signal, said first audio data being generated by sampling an audio source at a first sampling rate and said second audio data being generated by sampling said audio source at a second sampling rate different than said first sampling rate, said method comprising **[the steps of]**:

receiving said first audio data within said **[from a]** first **[audio]** stream;

receiving said second audio data within said **[from a]** second **[audio]** stream;

generating a plurality of samples by normalizing [in sampling rate] a portion of said first audio data to said second sampling rate [which overlaps in time with said second audio data to generate first samples], said portion of said first audio data being normalized corresponding to an overlapping portion of said common audio signal sampled at said first sampling rate;

[normalizing in sampling rate a portion of said second audio data which overlaps in time with said first audio data to generate second samples;] and

cross-fading pairs of samples, each pair substantially corresponding to a playback time, one sample of each pair being selected from one of said [first] plurality of samples, the other sample of each pair being selected from a portion of said second [samples] audio data, said portion of said second audio data being selected corresponding to said overlapping portion of said common audio signal sampled at said second sampling rate.

3. (As Amended Herein) A method for cross-fading between first and second received **[audio]** streams representing the same original audio signal, the method comprising the steps of:

receiving in a receive buffer first audio data representing a time period t_1 and sampled at a first target sampling rate of said original audio signal, said first audio data contained within ~~[from]~~ said first ~~[audio]~~ stream;

decoding said first audio data to generate first audio samples;

~~[resampling said first audio samples in accordance with a target sampling rate to generate first resampled audio samples;]~~

receiving in said receive buffer second audio data representing a time period t_2 of said original audio signal and sampled at a second target sampling rate different from said first target sampling rate, said second audio data from said second ~~[audio]~~ stream, said time period t_1 and t_2 overlapping by ~~[in]~~ a time period t_3 in said original audio signal ~~[time-period t_1];~~

decoding said second audio data to generate second audio samples;

resampling said second audio samples in accordance with said first target sampling rate to generate second resampled audio samples, each of said second resampled audio samples substantially corresponding in time to a respective one of said first ~~[resampled]~~ audio samples to form a sample pair; and

cross-fading each sample pair corresponding to a time within said time period t_3 , by applying a first cross-fade weight to a first sample of said sample pair to obtain a first contribution, by applying a second cross-fade weight to a second sample of said sample pair to obtain a second contribution, and by combining said first and second contributions.

4. (As Amended Herein) The method as described in Claim 3, wherein said first ~~[audio]~~ stream represents said original audio signal at a first sampling rate and said second ~~[audio]~~ stream represents said original audio signal at a second sampling rate.

7. (As Amended Herein) A system for cross-fading between first and second received ~~[audio]~~ streams representing an original audio signal, said system comprising:

a receive buffer storing a received ~~[audio]~~ stream ~~[data]~~;

a decoder decoding ~~[audio]~~ said received stream ~~[data]~~ from said receive buffer into digital samples;

a sample-rate converter resampling said digital samples in accordance with a target sampling rate; and

a cross-fader operative ~~[responsive to a cross-fade signal]~~ to cross-fade first resampled digital samples from said first **[audio]** stream with resampled digital samples from said second **[audio]** stream, said first resampled digital samples corresponding to an overlap ~~[overlapping]~~ in time of said original audio signal ~~[with said first digital samples]~~.

8. (As Amended Herein) The system as described in Claim 7, wherein said cross-fader applies cross-fade weights to paired resampled samples from said first and second **[audio]** streams to generate cross-faded samples, each of said pairs of resampled samples substantially corresponding to a playback time.

10. (As Amended Herein) A system for cross-fading audio data, the system comprising:

means for receiving transmitted audio data;

means for decoding audio data from two different audio streams;

means for resampling audio data from two different audio streams to a common sampling rate, said audio streams encoded at different sampling rates; and

means for cross-fading resampled audio data from first and second portions of said two different audio streams, said audio data overlapping in time, said two different audio streams representing the same original audio signal.